ABSTRACT OF THE DISCLOSURE

Method for employing optical state-change organic polymer films as information-storage layers in optoelectronic, high-density memories, and high-density optoelectronic memories produced by the method. In certain embodiments, the optical state-change organic polymer films can be manufactured to exhibit two different, stable optical states, one transparent, and one light-absorbing and/or light-reflecting, that can be locally, stably, and reversibly induced by application of an electrical field. In various embodiments, information is digitally encoded in an information-storage layer as bits, the value of each bit represented by the optical state of an area of the information-storage layer corresponding to the bit. In various embodiments, the optical state of a small region of the information-storage layer can be determined by exposing the small region to visible light, and determining whether or not a photodiode layer in an information-storage medium below the information-storage layer generates an electrical current in response to illumination.